

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
17 June 2004 (17.06.2004)

PCT

(10) International Publication Number
WO 2004/051355 A1

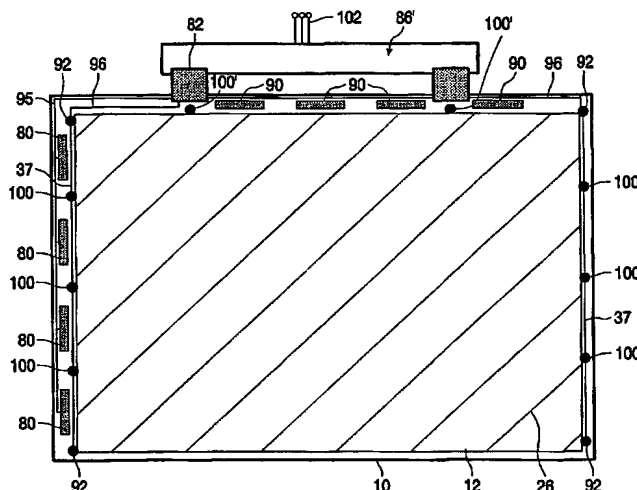
- (51) International Patent Classification⁷: **G02F 1/1345, 1/13**
- (21) International Application Number: **PCT/IB2003/005270**
- (22) International Filing Date:
19 November 2003 (19.11.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
0228269.7 4 December 2002 (04.12.2002) GB
- (71) Applicant (for all designated States except US): **KONINKLIJKE PHILIPS ELECTRONICS N.V. [NL/NL];**
Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **HECTOR, Jason, R. [GB/GB];** c/o Philips Intellectual Property & Standards, Cross Oak Lane, Redhill, Surrey RH1 5HA (GB).
DEANE, Steven, C. [GB/GB]; c/o Philips Intellectual Property & Standards, Cross Oak Lane, Redhill, Surrey RH1 5HA (GB).
- (74) Agent: **WILLIAMSON, Paul, L.;** Philips Intellectual Property & Standards, Cross Oak Lane, Redhill, Surrey RH1 5HA (GB).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,

[Continued on next page]

(54) Title: ACTIVE MATRIX DISPLAY DEVICES



(57) Abstract: In an active matrix display device, particularly an AMLCD, having an array of display pixels (8) and comprising pixel electrodes (16), associated switches (22), and address lines (18, 20) carried on a first substrate (10), a common electrode (26) carried on a second substrate (12), a drive circuit (40, 80) carried on the first substrate (10) including at least one conductor line (96) providing a drive voltage for the common electrode (26) and to which the common electrode (92), the common electrode (26) on the second substrate is utilised to provide also electrical connection between the one conductor line (96) and at least one other circuit element (37) carried on the first substrate (10). The use of the common electrode in this way assists in avoiding problems due to resistances of connections formed on the first substrate. The connection to a storage capacitor line (37, 36) may benefit especially. The common electrode (26) may be connected to the circuit elements on the first substrate via contact material (92, 100) extending across the gap between the two substrates.

INTERNATIONAL SEARCH REPORT

International application No

PCT/IB 03/05270

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G02F1/1345 G02F1/13

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G02F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

PAJ, EPO-Internal, WPI Data, IBM-TDB, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 1996, no. 10, 31 October 1996 (1996-10-31) -& JP 08 146448 A (SONY CORP), 7 June 1996 (1996-06-07) abstract figures 1,2	1-3, 13
Y	-----	4, 10-12
Y	US 5 625 476 A (KIM DONG-KYU) 29 April 1997 (1997-04-29) cited in the application abstract figures 8-13 ----- -/-	4, 10, 11

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- *&* document member of the same patent family

Date of the actual completion of the international search

11 March 2004

Date of mailing of the international search report

23/03/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Kentischer, F

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 03/05270

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>US 5 721 599 A (CHENG JIA-SHYONG) 24 February 1998 (1998-02-24) abstract figure 3</p> <p>-----</p>	12

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 03/05270

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
JP 08146448	A	07-06-1996	JP	3337045 B2	21-10-2002
US 5625476	A	29-04-1997	KR	139374 B1	15-06-1998
			JP	8271924 A	18-10-1996
US 5721599	A	24-02-1998	NONE		